Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1 - 11. Canceled.

12 (Previously Presented). A method for adaptively controlling network traffic on a communications network with a shared communications medium, said method comprising:

determining traffic category permission probabilities;

calculating an overall permission probability, *PP*;

contending for access to the shared communications medium;

updating the traffic category permission probabilities by an amount that is proportional to how far a ratio of an amount of time the medium is in an idle state to an amount of time the medium is in a collision state is from optimal;

determining updated traffic category permission probabilities; and

repeating the above steps until buffered traffic is transmitted wherein there are a plurality of traffic categories, and a traffic category permission probability is assigned for each traffic category and the calculating an overall permission probability, *PP*, is a summation of the traffic category permission probabilities assigned to each traffic category.

13 (Previously Presented). The method of claim 12, wherein updating traffic category permission probabilities comprises a centralized controller assigning the traffic category permission probabilities.

14 (Previously Presented). The method of claim 12, wherein the shared communications medium is shared by a plurality of stations, and wherein updating traffic category permission probabilities comprises each station assigning the traffic category permission probabilities.

15 - 16. Canceled.

17 (0riginal). The method of claim 12, wherein the shared communications medium is shared by a plurality of stations, and wherein the calculating overall permission probability step is performed by stations with traffic to transmit.

18 (0riginal). The method of claim 12, wherein the contending for access step comprises:

determining if a contending station is permitted to transmit; and

sending traffic from an appropriate traffic category.

19 (0riginal). The method of claim 18, wherein the determining step comprises:

generating a random number, *X;* and

granting the contending station permission to transmit only if the random number, *X*, is less than or equal to the overall permission probability, *PP*.

20 (Currently Amended). A method for adaptively controlling network traffic on a communications network with a shared communications medium, said method comprising:

generating a random number, *X*;

determining traffic category permission probabilities;

calculating an overall permission probability, *PP*;

determining if a contending station is permitted to transmit;

sending traffic from traffic category N, where N meets the following criteria:

if $0 < X < TCPP_{i0}$, then N = 0; else

if $\sum_{i=0}^{M-1} TCPP_i < X \leq \sum_{i=0}^{M} TCPP_i$,where 1 ≤ M ≤ 7, then $N = M$,

and where $TCPP_i$ is the traffic category permission probability for traffic category i and is set to zero if traffic category i has no traffic to send from the contending station;

determining updated traffic category permission probabilities; and

repeating the above steps until buffered traffic is transmitted wherein there are a plurality of traffic categories, and a traffic category permission probability is assigned for each traffic category and the calculating an overall permission probability, *PP*, is a summation of the traffic category permission probabilities assigned to each traffic category.

21 (Original). The method of claim 12, wherein the contending for access step comprises:

setting a backoff timer;

determining if a contending station can transmit; and

sending traffic from an appropriate traffic category.

22 (Currently Amended). The method of claim 21, wherein the setting a backoff timer comprises:

~~generating a random number, *X*;~~

calculating a backoff time based on the random number, *X;* and

setting the backoff timer to the backoff time.

23 (0riginal). The method of claim 22, wherein the calculating a backoff time uses the formula:

$J = [\log(X)/\log(1 - PP)]$, where [*Y*] denotes a largest integer number not exceeding Y and PP is the overall permission probability.

24 (0riginal). The method of claim 21, wherein the determining step comprises:

freezing a backoff timer when the shared communications medium is busy;

decrementing a backoff timer after the shared communications medium is idle for a point coordinating function inter-frame space period; and

waiting until the backoff timer expires.

25 (Currently Amended). The method of claim 21, wherein the sending traffic from an appropriate traffic category comprising sending traffic from traffic category N, where N meets the criteria:

if $0 < C*X \leq TCPP_{1\underline{0}}$, then N=0;else

if $\sum_{i=0}^{M-1} TCPP_i < C * X \leq \sum_{i=0}^{M} TCPP_i$, <u>where 1 ≤ M ≤ 7,</u> then N = M,

<u>and</u> where C= $\sum_{i=0}^{Z} TCPP_i$, Z<u>+1</u> is a total number of traffic categories, and $TCPP_i$, is the traffic category transmission probability for traffic category *i* and is set to zero if traffic category *i* has no traffic to send from the contending station.

26 (Canceled).

27 (0riginal). The method of claim 12, wherein the determining updated traffic category permission probabilities occurs at regular fixed intervals of time.

28 (0riginal). The method of claim 12, wherein the shared communications medium is shared by a plurality of stations, and wherein the determining traffic category updated traffic category permission probabilities is performed at each station with traffic to transmit.

29 (0riginal). The method of claim 12, wherein the determining updated traffic category permission probabilities is performed at a centralized controller.

30 (0riginal). The method of claim 12, wherein the determining updated traffic category permission probabilities step occurs at irregular time intervals and is triggered by a network performance metric.

31 (Original). The method of claim 30, wherein the network performance metric is a ratio of an amount of time the medium is in an idle state to an amount of time the medium is in a collision state is outside of an interval (1 - *epsilon, 1* + *epsilon),* where *epsilon* is a predetermined value.

32 - 65. Canceled.